

EXECUTIVE SUMMARY

The U.S. Marine Transportation System (MTS) consists of waterways, ports and their intermodal connections, vessels, vehicles, and system users. Each component is a complex system within itself and is closely linked with the other components. It is primarily an aggregation of State, local, or privately owned facilities and private companies. As with the U.S. economy as a whole, decision making and investment are primarily driven by the marketplace. In addition, national, State, and local governments participate in the management, financing, and operation of the MTS.

More than 1,000 harbor channels and 25,000 miles of inland, intracoastal, and coastal waterways in the United States serve over 300 ports, with more than 3,700 terminals that handle passenger and cargo movements. The waterways and ports link to 152,000 miles of rail, 460,000 miles of pipelines, and 45,000 miles of interstate highways. Vessels and vehicles transport goods and people through the system. The MTS also contains shipyards and repair facilities crucial to maritime activity.

As the world's leading maritime and trading nation, the United States relies on an efficient and effective MTS to maintain its role as a global power. The MTS provides American businesses with competitive access to suppliers and markets in an increasingly global economy. The MTS transports people to work; provides them with recreation and vacation opportunities; puts food on their tables; and delivers many of the items they need in their professional and personal lives. Within the United States, the MTS provides a cost-effective means for moving major bulk commodities, such as grain, coal, and petroleum. It is a key element of State and local government economic development and job-creation efforts and the source of profits for private companies. With its vast resources and access, the MTS is an essential element in maintaining economic competitiveness and national security.

Annually, the U.S. marine transportation system:

- Moves more than 2 billion tons of domestic and international freight;
- Imports 3.3 billion barrels of oil to meet U.S. energy demands;
- Transports 134 million passengers by ferry;
- Serves 78 million Americans engaged in recreational boating;
- Hosts more than 5 million cruise ship passengers; and
- Supports 110,000 commercial fishing vessels and recreational fishing that contribute \$111 billion to State economies.

The MTS provides *economic value* by affording efficient, effective, and dependable all-weather transportation for the movement of people and goods. Waterborne cargo alone contributes more than \$742 billion to U.S. gross domestic product and creates employment for more than 13 million citizens.

The MTS provides *national security value* by supporting the swift mobilization and sustainment of America's military. As an example, 90 percent of all equipment and supplies for Desert Storm were shipped from U.S. strategic ports using our inland and coastal waterways.

The MTS provides *environmental value* by being an environmentally responsible method of transportation. Ships and barges have the fewest accidental spills or collisions of all forms of transportation. Waterways are an attractive alternative transportation mode for relieving congestion on roads and rails. The impact of increased MTS activity on the environment, however, has been an increasing concern.

The MTS provides *recreational value* to millions of Americans who participate in recreational boating and fishing or take sightseeing, excursion, dining, gaming, windjamming, whale watching, or nature cruises.

What are the Critical Issues Facing the MTS?

As comprehensive as the MTS is today, its ability to handle the emerging needs of tomorrow will be severely challenged.

Growing Levels of Demand: The total volume of domestic and international marine trade is expected to more than double over the next 20 years. The number of recreational users is expected to grow by over 65 percent to more than 130 million annually in the next 20 years. High-speed ferry transportation is experiencing rapid growth in response to land-transport congestion. Cruise ships anticipate attracting 6.5 million passengers by 2002. Commercial fishing is projected to increase. Military reliance on the MTS for force projection and sustainment is also expected to grow in the new millennium.

Shifting User Requirements: The business environment in which American companies must operate has become more competitive. They must be lean and capable of effectively serving larger, more demanding markets. Ports and other MTS operators must meet increasingly stringent requirements to successfully compete for American business. Everything must be accomplished faster and less expensively, while maintaining dependable, secure, and safe movement of goods. In response, transportation providers are merging or entering into business alliances. They are deploying new technologies and equipment to reduce the cost of moving goods and meet the needs of shippers. This includes larger and faster vessels capable of carrying more than 6,000 20-foot containers; double-stack trains for effectively transporting shipments over land; and advanced tracking systems so that businesses know where their goods are.

More Pressure on Infrastructure and Ensuring a Competitive MTS: The physical infrastructure and information systems that support the MTS must adapt to these changing needs. Key infrastructure issues include:

- *Dredging and marking the harbor channels that connect U.S. ports to the world.* Larger vessels, while more cost-efficient, require deeper waterways. Overall, the Nation's future dredging requirements can be expected to grow.
- *Modernizing locks and dams to regulate water flow and facilitate commerce.* By 2000, more than 44 percent of the inland waterway locks and dams will be at least 50 years old. Many locks are undersized for modern commercial barge movements.
- *Improving marine terminal capacity and access to rail, road, and pipeline.* Seamless movement of goods across transportation modes and geographical areas is needed to minimize transportation costs borne by the American consumer.
- *Advancing computer, communications, and navigation technologies to increase the productivity, safety, and security of the MTS.* Technologies include Intelligent Transportation Systems (ITS), such as Differential Global Positioning Systems (DGPS), Vessel Traffic Services (VTS), Physical Oceanographic Real-Time Systems (PORTS), and Electronic Navigational Charts (ENCs).
- *Minimizing conflicts among land uses along the waterfront and intermodal connections.* Many of our Nation's cities are trying to revitalize their communities through waterfront redevelopment that has focused on residential, commercial, and tourist-related uses, leaving less land available for port development. Intermodal connections at ports also experience land

constraints because of zoning and environmental regulations that restrict expansion, particularly in densely populated areas.

Enhancing Coordination: A recurring theme has been the need for comprehensive coordination, leadership, and cooperation among Federal, regional, State, and local agencies, as well as private sector owners and operators. MTS users often are unaware of the other public and private users' activities and inherent limitations. Federal, State, and local MTS service providers have not coordinated their efforts nor have they reached a consensus on goals and actions to maximize efforts and resulting benefits for the entire spectrum of MTS users and beneficiaries. Establishing partnerships (public-public, public-private, private-private) among competitors or organizations that operate with different and independently developed MTS objectives is difficult.

Ensuring a Safe System: With the rapid expansion of trade and recreational opportunities in recent years, many parts of the MTS are being stretched to their limits to cope with the size, speed, and diversity of vessels and users of the MTS. Human factors, ranging from the growth in personal watercraft use to inadequately trained crews, clearly contribute to MTS-related accidents.

Funding the System: Funding to create an MTS capable of meeting the increased demands of trade, passenger, and recreational use, coupled with national security, environmental stewardship, and safety requirements, is a responsibility of both the public and private sectors. Improvements in technology, better coordination, and process improvement will help, but not entirely relieve, the government and the private sector of growing resource and investment demands. In turn, this issue may give rise to the need for innovative financing mechanisms or user fees.

Sustaining the Environment: MTS encompasses some of our Nation's most treasured resources including coastal and estuarine waters, inland rivers, and associated wetlands and critical habitats. As such, MTS users and service providers, from recreational boaters to commercial vessels and waterfront terminals, should operate in a manner that protects and sustains the environment. Marine operations, maintenance, and investment should be in harmony with environmental protection. Environmental quality is essential for sustaining coastal and marine ecosystems, commercial and recreational fisheries, and the economic vitality of the MTS. Thus, the MTS decision making and planning must acknowledge and account for the fundamental interdependency between the MTS and the environment.

Increasing National Security Needs: The MTS encompasses a security landscape characterized by a rise in international organized criminal activity, along with a growing array of rogue states and terrorists. MTS users and service providers must deal with criminal enterprises that seek to exploit vulnerabilities in the system to pilfer cargo or smuggle contraband. MTS service providers must be vigilant to potential terrorist opportunities. The MTS must remain capable of supporting national security objectives — the projection of U.S. military force and their sustainment depends 90 to 95 percent on sealift deployment.

What is the Desired State of the MTS in 2020?

Task Force members adopted the following vision statement that was developed at the MTS National Conference:

The U.S. Marine Transportation System will be the world's most technologically advanced, safe, secure, efficient, effective, accessible, globally competitive, dynamic and environmentally responsible system for moving goods and people.

To realize this vision, the Task Force members also adopted the following set of guiding principles, which were designed at the MTS National Conference to shape the strategies and actions necessary to achieve the MTS for 2020. Achieving this vision is the equal responsibility of private, local, State, and national stakeholders.

- Integration of the MTS with domestic and international transportation systems will provide for the national security, ensure economic well-being, enhance the quality of life, and ensure environmental protection.
- Clearly defined, coordinated, and consistent Federal leadership is needed to achieve the vision for the MTS.
- Public-private sector partnerships will meet MTS challenges through shared responsibility, accountability, and agreement on funding.
- MTS decisions will be based on full consideration of and harmonization among diverse interests.
- Aggressive, cost-effective technology development and deployment are essential to maintaining long-term competitiveness.
- People — work force, passengers, and other stakeholders — are critical to the successful operation of the MTS, and human factors are essential to its development.

How Can We Attain the Vision of MTS 2020?

The Task Force recommended the following strategic actions, which must begin now to move the current MTS toward the system needed in 2020:

Facilitate coordination among MTS users and stakeholders: Improved coordination — among and through the public and private MTS stakeholders at the local, regional, and national levels — is a key element of the MTS envisioned for 2020. Greater Federal coordination will better inform policy makers on legislation, investment strategies, resource allocations, and regulations, without duplicating or overlapping existing decision-making processes.

A *Coordination Framework* provides the mechanism for achieving this objective. Coordination at the national level consists of a new Federal Interagency Committee for the Marine Transportation System (ICMTS), created through the expansion of the existing Interagency Committee for Waterways Management (ICWWM), and an MTS National Advisory Council (MTSNAC). The ICMTS will be the national coordinating body where Federal agencies responsible for one or more aspects of the MTS come together and discuss strategies to minimize duplicate efforts and coordinate overlapping functions. The MTSNAC will provide a structured approach for non-Federal stakeholders to contribute input to national-level issues. The MTSNAC will be composed of senior-level representatives from non-Federal organizations. Additional key elements of the MTS coordination framework include local and, where appropriate, regional committees.

Address MTS funding issues: Funding is at the core of many issues relating to the MTS, but it was one on which the Task Force could not reach full consensus. However, the Task Force did recommend a four-step process to gain a better understanding of MTS funding:

- *Coordinate public funding processes.* There is a need to better coordinate Federal resource considerations using a systems perspective rather than a mode-by-mode or activity-by-activity basis to maximize the use of limited resources.
- *Define MTS funding mechanisms.* Federal funding, including potential user fees and private

investment alternatives, should be examined and defined to the best extent possible. This analysis will provide MTS stakeholders with a better understanding of public and private funding sources.

- *Forecast demands on the MTS.* A clear understanding of the projected demands will provide guidance and information to public and private decision makers regarding investments.
- *Explore innovative funding mechanisms.* The objective of this effort is to maximize the ability of stakeholders to leverage limited fiscal resources and to make more effective use of existing funds.

Achieve the vision for system mobility and competitiveness: The ability to move people and cargo freely without infrastructure impediments or congestion delays is essential. Infrastructure that may have served well in the recent past, or is currently serving adequately, may become inadequate in the near future, causing unacceptable delays and costs. Actions are recommended in five strategic areas:

- *Establish a vessel clearance information exchange and one-stop shopping.* Establish one-stop shopping for Federal inspection and reporting requirements. Where appropriate, partnerships among Federal agencies and State and local governments should be developed. This recommendation includes the coordination and streamlining of multiple agency inspections and procedures.
- *Facilitate landside access to ports.* A concerted effort among port interests along coastal ranges is needed to address this issue. The feasibility and effectiveness of a port-oriented, intermodal program of Intelligent Transportation System (ITS) projects for addressing MTS capacity issues should be pursued. Local and State forums involving public and private sector stakeholders should be established to evaluate port access projects. These efforts would facilitate a rational analysis and a factual basis for decisions.
- *Create a national cooperative MTS research program.* A national cooperative MTS research program would coordinate and enhance MTS-related research by government agencies and the private sector in support of assigned public mandates and market priorities. Such a national program would also serve to foster and support intermodal MTS technology requirements that are beyond the scope of individual agency mandates and the funding priorities and interests of the private sector.
- *Develop systemwide traffic forecasts.* MTS infrastructure investment should be based on realistic forecasts of growth trends, along with the changing patterns of both domestic and foreign traffic. Forecasts should be developed for planners and stakeholders at the national, regional, and local levels, as appropriate, that incorporate alternative scenarios of U.S. and world market trends, energy sources, and internal U.S. demographic and economic regional shifts. Forecasts should also be periodically reviewed and updated.

Improve awareness of the MTS: Many Task Force members expressed a desire to better inform the general public and policy makers as to the value and role of the MTS in people's daily lives. The Task Force recommends that State, local, and private sector MTS stakeholders give priority to promoting the overall value of the MTS through their existing trade associations and other outreach efforts. In conjunction with National MTS stakeholders, these groups should also:

- Develop a collective set of cohesive messages to inform the public about the MTS and its relationship to their quality of life.
- Promote the Nation's maritime heritage and the value of a career in the MTS.

- Develop programs and outreach efforts to promote the responsibility of the boater, mariner and maritime professionals to protect the marine environment.

Establish information management and infrastructure supportive of the MTS: The quality of the information systems within the MTS is a key determinant in the safety, security, environmental soundness, and mobility of the system. Actions are recommended in three strategic areas:

- *Hydrographic and weather information.* Some of the greatest safety concerns relate to the availability of timely, accurate, and reliable navigation information. Providing accurate and timely hydrographic, charting, and meteorological data is crucial to the future performance of the MTS, the safety of vessels and passengers, and the minimization of risks to the environment.
- *Tracking cargo, passengers, and vessels.* Government agencies and many commercial private sector organizations require pertinent vessel, cargo, and passenger location and movement information to support MTS commercial operations as well as incident response, emergency management, and law enforcement activities. The integration of existing systems and design of any planned systems should be undertaken to maximize MTS operational awareness in support of these efforts.
- *Waterways traffic management information.* Systems supporting traffic controls and navigation assistance should be capable of providing order and predictability to commercial and recreational users, while simultaneously maximizing system capacity for safe vessel movement. Such systems will provide mariners, as well as port and waterways managers, with access to timely and accurate information on all matters pertaining to the waterways, the activity within the waterways, and the vessels, cargo, and crews of vessels transiting the waterways.

Meet national security objectives: The rising demands for efficient and uninterrupted MTS operations to service the projected growth in passenger and cargo movements should be balanced with the need to invoke safeguards and inspections to protect against the array of security threats, and support military mobilization. Two strategic action areas are:

- *Organized crime and terrorism.* Much of the investment in security infrastructure and protection of port facilities is the responsibility of State or private sector managers with support from Federal agencies. Yet, current policies prevent sharing intelligence information related to security threats and vulnerabilities with these entities. The Presidential Interagency Commission on Crime and Security in U.S. Seaports will heighten national awareness of security issues in the areas of cargo crimes, smuggling and terrorism and develop a coordinated interagency approach to MTS port security which addresses seaport organized crime and terrorism. Areas recommended for consideration and further development by the Commission include security awareness, system transparency, public and private sector coordination, and international cooperation. The Task Force defers to the Commission to make specific recommendations.
- *Military Mobilization and National Defense.* With growth in congestion and activity within the MTS there is increased opportunity for those with ill intent to avoid detection. Most governments and non-state actors will avoid force on force confrontation with the U.S. military. However, they may attempt to target the MTS to disrupt commercial carriers serving to mobilize military cargo and assets or attack U.S. critical infrastructure. Recommendations in this area include:
 - *Vulnerability assessments.* Establish baselines and conduct periodic reviews of the DOD strategic ports and waterways to determine vulnerabilities and readiness to meet mobilization requirements. Include exercises that test the readiness and ability to conduct uninterrupted mobilization while under asymmetrical attacks, e.g., chemical, biological, and information/control systems.

- *Ensure qualified operators.* As the U.S. relies more on commercial transportation activities to support national security objectives during contingencies, there is greater need to attract and retain a qualified MTS work force. MTS operators need to ensure continued use of qualified and well-trained personnel.
- *Forge stronger public/private partnerships.* Stronger interagency and public/private sector partnerships are needed to support military mobilization and port training exercises. A collective public and private approach to support and sustain the Nation's capacity for uninterrupted rapid deployment of U.S. forces should be developed and implemented. This includes assurance of shipbuilding and repair infrastructure needed to maintain the U.S. fleet.

Achieve safety and environmental objectives: Two primary goals of the MTS are the safety of people and property and the protection of the environment. These areas are of paramount importance to all MTS users and stakeholders. Environmental protection will be consistently incorporated into all aspects of marine activities and decision making. The breadth and depth of safety and environmental issues require a systematic approach as well as specific actions to achieve the desired MTS in 2020. Specific strategic areas of action identified by the Task Force include:

- *Local coordination.* Local committees should pursue safety and environmental concerns related to the MTS and develop and execute collective actions. For these purposes, the mission of existing harbor safety committees or local planning groups could be expanded to conduct comprehensive assessments of local safety and environmental risks and needed actions.
- *Ship-terminal interface.* Safety and environmental risks posed by some marine terminals include facilities that are too small for the ships served or poorly located; inadequately manned by personnel lacking training and experience; operating under inadequate procedures; and using inadequate or poorly maintained cargo handling equipment. Port operators should initiate assessments, where needed, to review safety and environmental protection systems; operational procedures and personnel training; and accident and fire drills. The assessments would identify a prioritized list of actions and assign responsibilities for improving safety and environmental protection.
- *Port development and terminal operations.* Port and terminal operations pose potential multiple media environmental risks, such as from storm water runoff, port expansion, vessel support activities, cargo handling, chemical storage and handling, motor carrier and rail port activities, and public access and recreation. Ports should continue to work closely as environmental stewards with Federal, State, and local governments, as well as other stakeholders, to conduct operations and development in an environmentally responsible manner.
- *Vessel operation and the human element.* Actions to address the human element in the areas of vessel navigation, recreational boating, and accidental discharges are needed and recommended as they offer the greatest potential for risk reduction.
- *Vessel discharges and shore reception facilities.* Almost all ships generate oily water mixtures from normal engine room and bunkering operations, cargo residues, sewage, and solid waste such as refuse. A vessel can legally deal with these pollutants using either shipboard techniques or by transferring wastes to a Shore Reception Facility (SRF). New shipboard techniques for environmentally sound handling of shipborne-generated wastes have moderated demand for SRFs; however, a need for SRFs still exists. Ports should assess their inventory of current and projected vessel discharges and an assessment of the capacity of existing SRFs should be prepared. These analyses would form the basis for developing prioritized actions to handle vessel discharges in an environmentally sound manner and support research and development to reduce discharges and air emissions.

- *Nonindigenous species.* The introduction and spread of exotic or nonindigenous species into an area continue to cause adverse economic, ecological, and human health impacts. The movement of these species to and throughout the U.S. occurs in ballast water, cargo, and on vessel hull surfaces. Recommendations include focusing on ballast water management research and technologies, along with working internationally to establish a legally binding process and industry standards for ballast water management.
- *Dredging and channel design.* Channel design and dredging are complex undertakings that impact MTS safety, the environment, and mobility. Channel dredging costs and environmental impacts, including the capacity to dispose of dredged material, are significant concerns. The application of a systematic approach and continuity with previous work in this area are essential for success. Several specific actions recommended by the Task Force include:
 - Pursue continued efforts in dredged material management and encourage and guide stakeholders to explore beneficial uses and adopt a watershed approach. Integrate dredged material management planning into local/regional watershed planning. The focus should shift from dredging and disposal to overall sediment management, which includes the need for holistic watershed and local/regional planning efforts.
 - The National Dredging Team (NDT) should coordinate and communicate its efforts with the ICMTS. The NDT is encouraged to continue to address dredged material management issues and initiatives, such as supporting the Regional Dredging Teams, promoting beneficial use of dredged material, developing scientific tools, resolving national dredged material management issues, and promoting public education and outreach to stakeholders.
 - Conduct research on effective sediment management, including research into the effect of structures such as weirs on navigation and improved dredging techniques to reduce concerns such as the release of bottom contaminants.
 - Incorporate provisions into all channel development projects for protection and/or improvement of permanent and seasonal wetlands and other aquatic habitats.
 - Apply hydrodynamic and maneuvering criteria to new channels and some existing channels and vessels to determine acceptable ship sizes and vessel traffic controls such as no-passing and no-meeting zones. Analyze the trade-off between vessel operations and channel criterion with the participation of all stakeholders.
 - Support and conduct research on improved navigation system efficiency and safety, which can moderate the need for dredging. Prepare and publish current guidance on design of waterway approach channels, including channel width and depth for mixed deep and shallow-draft vessel traffic; waterway use and allocation conflicts; ice mitigation measures for navigable rivers; and control of icing at locks and dams.

Who Needs to Take the First Step?

This Report provides an overall framework and general direction for both public and private MTS stakeholders to follow to achieve the MTS vision in 2020. Federal Task Force members are encouraged to promote the report recommendations within the policy and budget processes of their Departments and agencies. Non-Federal stakeholders are encouraged to make these recommendations a priority within their operations.

The development of this report has been a collaborative public and private sector effort. Continued cooperation and coordination will be essential to achieving our shared MTS vision.